

REMARKS

The instant Amendment is filed in response to the non-final Office Action of August 9, 2004. Claims 1-3 and 6-7 are presented for consideration, while claims 4 and 5 have been cancelled. Claims 1-3 have been amended to more clearly define the patentable aspect of applicant's unique invention, and dependent claims 6 and 7 remain unchanged. In summary, claims 1-3 and 6-7 are presented for consideration, at this time.

Attorney for applicant responds to the rejection under 35 U.S.C. 112, second paragraph, in the following manner. Attorney for applicant has revised clause (e) of claim 1, to point out that the rocket assisted payload includes, a booster rocket, and a payload releasably secured thereto. Claim 1, as amended, further points out that power is delivered to the booster rocket in order to launch the rocket and payload.

As for the "means for retaining said containerized launch tubes in an an upstanding, vertically oriented array," said "means..." do, in fact, refer to spacers 38, 40. Claim 3 has been revised to avoid confusion between the broad recitation in claim 1, and the more restrictive recitation in claim 3. Claim 5 has been cancelled.

As for the term "heavy" in dependent claim 2, such term has been cancelled. The container, in claim 1, is now stated to be a metal container.

As for the Examiner's objection regarding the lack of proper antecedent basis in the specification for certain terms appearing in the claims of record, the dimensions of the metal container recited in claim 2, i.e, 20 x 8 x 8 feet, are noted in paragraph [0013] on page 2 of the specification.

Support for spacers, or other means, for retaining launch tubes 36 a fixed distance apart, such as a foot, is found in paragraph [0015] on page 6 of the specification. Claim 4 has been cancelled.

Applicant's containerized rocket assisted payload launch system, as reflected in the claims of record, represents

a significant advance over known missile launching systems. The utilization of a standardized metal shipping container, to house an array of concentric containerized launch tubes, gives rise to significant operational advances for the military. The shipping container is readily transportable by ship, truck, or air. The density of the concentric containerized launchers provides an unparalleled volume of fire per container. The firing system for the container requires known, and proven technology. The container is relatively inexpensive and can be discarded after its contents have been launched. Diverse concentric canister launch tubes, with different payloads, can be employed in response to the selection of different military targets.

Turning now to claim 1, as amended, such claim positively recites the metal container in clauses (a)-(c). Clause (d) positively recites the containerized concentric tubes, while clause (e) now describes the rocket assisted payload (RAP) in greater detail, specifically mentioning the booster rocket to which the payload is releasably secured. Clause (g) calls for means (spacers 38, 40) for retaining the launch tubes in a fixed, upstanding, vertically oriented array.... Clauses (h) and (i) complete the broad outlines of the launch system by reciting an umbilical cord... and a sequence controller connected to the umbilical cord(s) to deliver power to the booster rockets...

Dependent claim 2 recites the dimensions of the metal container, which corresponds to the dimensions of the standardized, study metal container used for intermodal transportation. Dependent claim 3 notes that the containerized concentric tubes are retained about a foot apart for optimum performance. Dependent claims 6 and 7 point out that the metal containers can be stacked two high, or side by side, to increase the capacity of the system.

The prior art patents cited by the Examiner lack the requisite teaching to combine the patents, and render applicant's invention, as claimed, obvious under 35 U.S.C. 103. Furthermore,

the three cited patents, assuming arguendo that such patents could be combined in some reasonable manner, still fail to render applicant's invention obvious.

Examining the cited patents to Weinstein (sic), Cammin-Christy, and Yagla, it is noted that French patent (publication) 2,264,265, was filed in the name of the assignee, Precitronic Gesellschaft fur Feinmeccchanik und Electronic M.B.H., and prosecuted by the French firm, Cabinet Z. Weinstein. An investigation of the "family" of related applications uncovered U.S. and German counterparts. The U.S. counterpart is U.S. Patent 4,004,487, granted to Kurt Eichweber, the inventor/patentee. A copy of U.S. Patent 4,004,487 is enclosed for the Examiner's ready reference.

Eichweber discloses a surface-to-surface missile fire control system employing a pilot projectile 6 fired into a predetermined indirect ballistic trajectory monitored by a fire-control station (FIG. 2) to determine its actual trajectory and actual coordinates in impact. The pilot projectile has a camera 24 for transmitting a target area picture to the fire-control station during its relatively steep descent. Pilot projectile laser 26 directs a laser beam onto the target area surface to show the prospective impact point of the pilot projectile in a target area picture displayed at the fire control station. The fire control computer automatically calculates the coordinates of each selected target, and aims a live projectile 14 to the selected target in accordance with its calculated coordinates and the actual trajectory of the pilot projectile.

Yagla discloses a modular, horizontal launching system for torpedoes, sensors, countermeasures, decoys and unmanned aerial vehicles, as noted in column 1, lines 10-18. The system utilizes canisters 12, of scalable dimensions, to accommodate different launchable devices 26A-26D, as shown in FIG. 2B.

Canister 12 includes frame member 20 with front, intermediate and rear sections 22 spaced apart by interconnecting struts 24, as shown in FIG. 2A. The canisters serve as launch

tubes, and as a shipping container for the launchable devices. The canisters fit between partitions 14 in housing 16 in Yagla, and may be stacked in the vertical direction, by interconnecting pins 44 and studs 38, as shown in Fig. 4.

The stacked canisters rest upon platform 18 in housing 16. The canisters are removed from housing 16 by a crane mechanism that inserts hook connectors into hooks 54 on I-beam 50 of shipping device, shown in Figure 5. Capture members 56 lift stud members 38, which allow the crane operator to lift the canister and move same to its desired location.

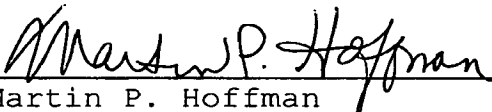
Cammin-Christy discloses a rocket launcher having a multiplicity of rocket tubes 12, which tubes may be directed as a unit and adjusted to produce a variety of patterns of fire. The rocket tubes are secured by ball pivots 15 to support plate 10, as shown in Fig. 2; the support plate is tilted by hydraulic assembly 58. Links 16 on lazy long assemblies 18, 19, 20, 21 interconnect the rocket tubes, and tilt same about pivots 15, in the lateral and/or longitudinal directions, when actuated by a drive shaft, as shown in FIG. 5. The fixed tube 13 serves as an anchor post for the movable tubes. Electrical firing circuit may provide progressive firing of tubes 12, or salvo-firing of tubes 12, as noted in column 4, lines 70-74.

Echweber does not disclose "containerized concentric tubes" "...for discharging rocket assisted payloads," each rocket assisted payload including a booster rocket with a payload releasably secured atop the rocket.. Also, launching guides 12 in Eichweber are independently adjustable in the X and Y directions for precise angular adjustment. The adjustable launching guides in Eichweber are more sophisticated and costly than applicant's claimed fixed array of upwardly opening containerized concentric tubes; such tubes are retained in a fixed array by means, such as spacers 38, 40. Such structural relationships lead to simplified operation for applicant's launch system, and greatly reduced costs for manufacture, transport and maintenance.

The secondary references to Yagla and Cammin-Christy do not disclose the containerized concentric launch tubes, nor means for retaining such tubes within a metal container in a fixed, vertically oriented array.

Consequently, claims 1-3 and 6-7, as presently constituted, define patentable subject matter over the prior art patents cited by the Examiner. Prompt, and favorable, consideration of the instant Amendment is believed to be in order. However, if the Examiner disagrees, and/or believes that an interview, either in person or over the telephone, would expedite prosecution and resolve any issues remaining in contest, he is urged to contact the undersigned attorney at (703)415-0100, to make suitable arrangements.

Respectfully submitted,


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Biblio

Desc

Claims

Page 1

Drawing



Missile fire-control system and method

Patent Number: ☒ US4004487

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Inventor(s): EICHWEBER KURT

Applicant(s): EICHWEBER KURT

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Equivalents: ☐ CH594866, ☐ DE2411790, ☐ GB1487656

Abstract

A surface-to-surface missile fire control system employing a pilot projectile fired into a predetermined indirect ballistic trajectory monitored by a fire-control station to determine its actual trajectory and actual coordinates of impact and wherein the pilot projectile has a camera for transmitting a target area picture to the fire-control station during its relatively steep descent. A pilot projectile laser directs a laser beam onto the target area surface to show the prospective impact point of the pilot projectile in a target area picture displayed at the fire-control station and a geographic position marking selector is manually operated to pick from the target area display and automatically enter into a fire-control computer the relative geographic coordinates of the projectile impact point and a selected target shown in the display, and the fire-control computer automatically calculates the coordinates of each selected target and aims a live projectile to the selected target in accordance with its calculated coordinates and the actual trajectory of the pilot projectile.

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